

## Chapter 7

# Test, Measurement, and Diagnostic Equipment Maintenance Support Operations

Chapter 7 describes TMDE maintenance doctrine. It also discusses—

- The Army's doctrine for TMDE calibration and repair support (C&RS). It provides an overview of how TMDE C&RS integrates corps contingency operations doctrine as described in FMs 100-5 and 100-10.
- The management structure of the DA TMDE C&RS program and describes the mission, employment, responsibilities, and functions of subordinate TMDE elements.
- Wartime and SASO TMDE C&RS support to meet theater-specific requirements and the means for ensuring accurate and traceable measurements.

## SECTION I – TMDE MAINTENANCE SUPPORT

7-1. TMDE is a collection of equipment used to test, through measurement accuracy, another piece of equipment or system. The DA TMDE C&RS program is based on AR 750-43 guidance. This Army regulation specifies policies and responsibilities for TMDE maintenance support and life cycle management. The regulation also identifies unit TMDE support coordinators' functions and responsibilities.

7-2. Types of TMDE range from torque wrenches in a toolbox to complex equipment supporting sophisticated weapons systems. TMDE is found in every commodity and system; every Army unit has TMDE. The TMDE C&RS program supports several parameters, including—

- Infrared.
- RADIAC.
- Direct current and low frequency items.
- Microwave.
- Mechanical items.

TMDE is generally recognized as special purpose (SP) or general purpose (GP). TMDE-SP is normally developmental in nature for a specific weapon system; TMDE-GP is normally commercial off-the-shelf (COTS) with a variety of applications.

## PROGRAM OBJECTIVES

7-3. The objective of the TMDE C&RS program is to make sure accurate and serviceable TMDE is available. The TMDE C&RS program continuously maintains measurement accuracy.

## **MANAGEMENT AND CONTROL**

### **STRUCTURE**

7-4. Department of the Army staff supervision for the TMDE program is assigned to the Deputy Chief of Staff for Logistics. US Army Materiel Command (AMC) manages the TMDE program via the US Army TMDE Activity (USATA). The USATA is a subordinate element of the US Army Aviation Missile Command (AMCOM). USATA provides administrative and technical support to the Army's TMDE program and conducts research in precision measurement (metrology) technology.

7-5. During wartime/deployment, AMC exercises theater command and control of the TMDE maintenance company, either through the LSE or another theater asset. The unit of attachment exercises operational command and control of area TMDE support teams (ATST) attached out from the TMDE maintenance company headquarters. During both wartime and peacetime operations, the USATA continues to provide technical and materiel support to TMDE elements worldwide.

### **MEASUREMENT TRACEABILITY**

7-6. Measurements are traceable using standards whose values have known relationships to national standards. These known relationships constitute an unbroken chain of comparisons with higher-level standards of accuracy. The US Army Primary Standards Laboratory (USAPSL), the Army's highest level of measurement accuracy, provides primary-level (P-level) calibration. Frequency and time measurements, however, are compared with measurements traceable to the US Naval Observatory. Figure 7-1 shows the hierarchy of TMDE traceability channels for measurement accuracy.

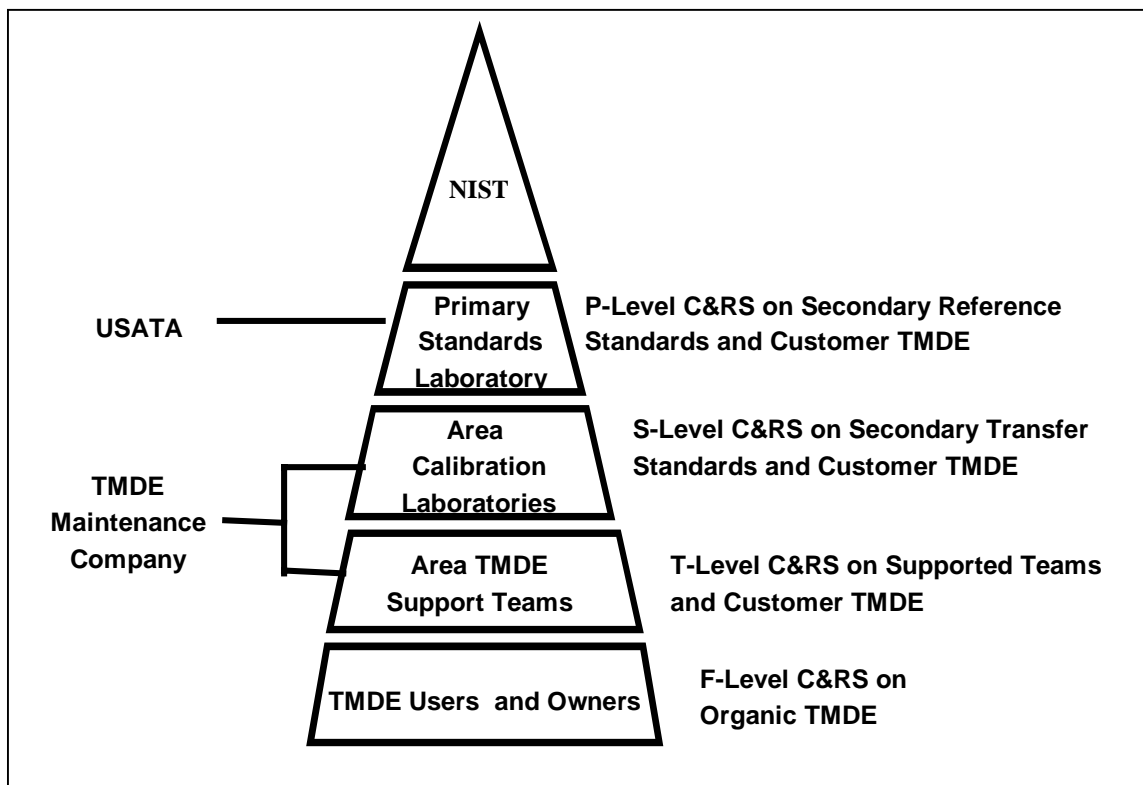


Figure 7-1. Hierarchy of TMDE Traceability Channels

## **INFORMATION MANAGEMENT**

7-7. The TMDE C&RS uses the TMDE Integrated Materiel Management System (TIMMS) to manage TMDE information. TIMMS—

- Is an automated database system. It provides TMDE information to TMDE support elements to manage their mission. TIMMS processes C&RS information to control scheduling, workload, and personnel.
- Maintains a historical database on C&RS in support of managerial processes and has the capability to interface with the Army's standard supply system. Currently, it provides minimal interface capability, but a future version will incorporate a full SARSS interface.
- Provides TMDE information to supported units with listings of TMDE inventory, advance notification of TMDE scheduled for calibration, and TMDE past-due calibration.
- Provides a status listing of the owner's TMDE located at the TMDE support facility.

## **C&RS REQUIREMENTS**

7-8. TMDE owners provide accurate, complete, up-to-date information on their organic TMDE to the supporting TMDE support element. To do this, TMDE owners compare the MTOE/TDA with TB 43-180 and submit additions, deletions, and changes to the TMDE support element. The TMDE support element is responsible for inputting the user-supplied data to the TIMMS database. These data are used in providing TMDE management reports.

## **SECTION II – THEATER TMDE TACTICAL OPERATIONS**

7-9. Section II discusses the TMDE maintenance support structure and calibration and repair/support operations.

### **TMDE MAINTENANCE COMPANY**

#### **MISSION**

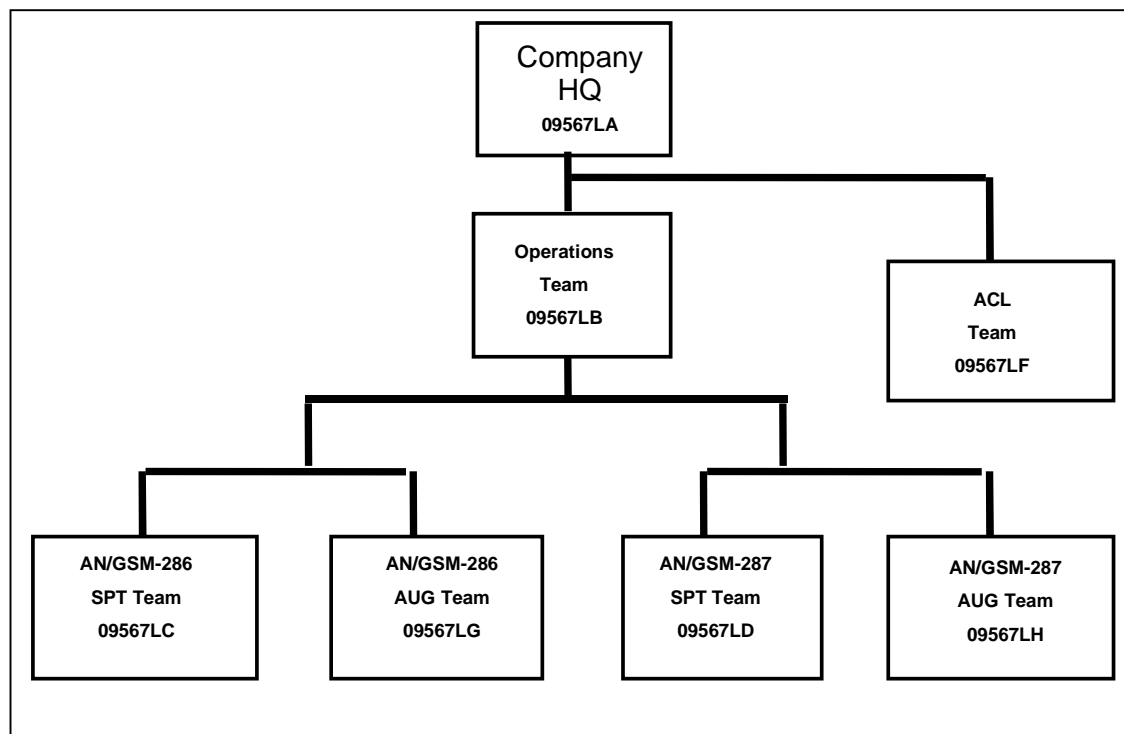
7-10. The mission of a TMDE maintenance company is to provide divisional TMDE C&RS. The TMDE maintenance company accomplishes this overall mission by deploying mobile ATSTs with the division main support battalion. The ATSTs maintain inherent direct support and general support (DS/GS) capabilities regardless of the area of deployment.

7-11. The overall theater support mission encompasses C&RS of TMDE-GP, selected TMDE-SP, and secondary reference level (S-level) calibration functions provided by the area calibration laboratory (ACL) for assigned ATSTs.

7-12. The TMDE support structure is designed to provide TMDE C&RS to all levels of the Army force structure, including depots. TMDE C&RS at EAD is provided by civilian elements of USATA either directly or by contracted support.

#### **STRUCTURE**

7-13. The thrust of TMDE maintenance support is to perform C&RS, identify requirements, determine repairs, and set priorities. The TOE support structure revolves around the establishment of a TMDE maintenance company comprised of associated staff and ATSTs and augmentation teams. Figure 7-2 shows the typical structure for a TMDE maintenance company.



**Figure 7-2. TMDE Maintenance Company**

7-14. All elements of the combat service support TMDE maintenance company are considered Category II units/elements. TOE 09567LA identifies the basic headquarters team. Additional teams (09567LB through LH) are required to make up the overall company and provide the personnel and equipment to accomplish the TMDE mission.

7-15. The category and densities of supported TMDE and the geographic dispersion of supported units determine the type and number of teams that constitute a TMDE maintenance company. This approach allows for a flexible and judicious deployment of support assets, i.e., company headquarters, operations section, ATSTs, and ACL.

7-16. Assembling teams to form a full-up TMDE maintenance company will not result in a centralized location of company elements, specifically ATSTs. Most ATSTs will collocate with their units of attachment throughout the theater.

7-17. The TMDE maintenance company headquarters' elements will generally collocate at theater level with the theater support command materiel management center (TSC MMC) headquarters company and at the corps level with the corps support command (COSCOM) headquarters company. At the division level, an ATST is attached to the MSB.

7-18. Deployed TMDE maintenance company elements depend on a host unit for Class IX supply support, logistical support, and administrative

services such as food, medical, financial, legal, vehicle and generator maintenance support.

## RESPONSIBILITIES

7-19. The TMDE maintenance company headquarters provides command and control for those teams located with the TMDE maintenance company headquarters. It is normally attached to the TSC/COSCOM MMC headquarters company for soldier support functions, such as—

- Logistical support.
- Food service support.
- Religious support.
- Legal services.
- Combat health support.
- Financial services.
- Personnel administrative support.

7-20. The company headquarters is responsible for the command and control of ATSTs. It performs traditional company-level administrative functions, including establishing and coordinating support agreements with supported units where ATSTs are attached. The company also operates a Class IX TMDE SSA.

7-21. The operations team, located in the corps and attached to a COSCOM MMC, plans, programs, supervises, and coordinates the technical operations of the TMDE maintenance company's C&RS mission. Functions of the operations team include—

- Ensuring secondary reference and secondary transfer standards are calibrated at prescribed time intervals, and accuracy requirements are met.
- Ensuring timely reporting and receipt of calibration and repair measurement data.
- Monitoring the accuracy of TIMMS-generated instrument master record file (IMRF) for supported units' TMDE and coordinating any changes with the LSE or USATA.
- Assisting the ACL and ATSTs with Class IX repair parts issues.
- Determining funding requirements for interservice support agreements (ISSA) for C&RS.
- Preparing operational and contingency plans.
- Maintaining a technical publications library.
- Developing on-the-job training (OJT) programs and monitoring training performance.
- Coordinating requirements for transportation of personnel and equipment.
- Providing a radiological protection officer (RPO) for the TMDE maintenance company.

7-22. Quality assurance (QA) section is responsible for monitoring the TMDE company's quality assurance and quality control programs.

Quality assurance inspections are only performed by the USATA QA office. Individual ATSTs and the ACL run quality control (QC) on the products on a random basis.

7-23. The ACL, located with the TMDE maintenance company headquarters, operates from environmentally controlled fixed structures. The ACL is not mobile. It operates and maintains the secondary reference measurement standards (S-level). It provides C&RS on standards requiring S-level calibration, particularly the secondary transfer standards belonging to the TMDE maintenance company ATSTs. To accomplish its mission, the ACL—

- Maintains the accuracy of measurement standards with traceability through the USAPSL to the National Institute of Standards and Technology (NIST).
- Performs S-level C&RS for itself, the ATST, and their supported units' TMDE, as identified in TB 43-180.
- Performs administrative functions concerning production status, management reports, and scheduling of C&RS. The ACL utilizes TIMMS in performing these and other functions.
- Evacuates to the USAPL or to the equipment manufacturer when item is beyond ACL capability.

2-24. Area TMDE support teams (ATSTs) are mobile TMDE support elements that may operate in an “uploaded” configuration where equipment and standards operate inside expandable vans. An ATST can also function in a “downloaded” configuration if required, when appropriate fixed facilities are available. The ATST—

- May be configured as either an AN/GSM-286 or an AN/GSM-287 support team.
- May be augmented when the workload exceeds the team's personnel capabilities. Augmentation teams provide personnel only.
- Ensures secondary transfer standards are accurately maintained and traceable to NIST.
- Performs secondary transfer-level (T-level) C&RS on TMDE-GP and limited TMDE-SP.
- Generates and analyzes TMDE management reports.
- Uses TIMMS to perform automated functions concerning management and administrative tasks.
- Requests repair parts and maintenance supplies required for C&RS operations.

2-25. AN/GSM-287 support teams provide enhanced and additional functional capabilities not found in AN/GSM-286 support teams. Primarily, the AN/GSM-287 set has a greater accuracy in low-frequency standards, added capability in microwave and infrared measurements, and additional physical and electronics standards.

2-26. The supported unit is responsible for TMDE delivery and pickup to/from the TMDE support element.